

In the Claims

1 1. (Currently Amended) A method of cooling a low Z target material of a neutron source
2 assembly, comprising ~~the step of~~:

3 providing, through by using a nozzle, a concentrated flow of~~circulating~~ liquid gallium
4 ~~past in a direction normal to a non-bombarded surface of the low Z~~ target material to cool the
5 low Z target material.

1 2. (Currently Amended) The method of claim 1, wherein said step of circulating
2 comprises ~~the steps of~~:

3 providing a reservoir of liquid gallium; and
4 pumping the liquid gallium from the reservoir, through the nozzle, to the low Z target
5 material to cool the target material and through a heat exchanger to remove heat from the liquid
6 gallium.

1 **Claim 3 (Cancelled)**

1 4. (Original) The method of claim 2, wherein the target material comprises beryllium.

1 5. (Currently Amended) A neutron source assembly having a liquid cooled target,
2 comprising:

3 ~~an accelerator based neutron source including modulator/reflector assembly that includes~~
4 a low Z target material that is bombarded by accelerated particles to produce a neutron flux; and
5 a cooling system ~~that~~ to circulates liquid gallium through said ~~modulator/reflector~~
6 accelerator based neutron source to cool the low Z target material;

7 said cooling system including a nozzle to provide a concentrated flow of liquid gallium in
8 a direction normal to a non-bombarded surface of the target material.

1 6. (Currently Amended) The neutron source assembly of claim 5, wherein said cooling
2 system comprises:

3 a reservoir of liquid gallium;
4 a heat exchanger in fluid connection with said reservoir of liquid gallium; and

5 means for circulating said liquid gallium between said reservoir of liquid gallium, said
6 heat exchanger and said ~~modulator/reflector assembly~~ accelerator based neutron source.

1 7. (Original) The neutron source assembly of claim 6, wherein said means for circulating
2 comprises a pump.

1 8. (Currently Amended) A liquid cooling system for a neutron source assembly, said
2 cooling system comprising:

3 a reservoir of liquid gallium;

4 a heat exchanger in fluid connection with said reservoir of liquid gallium;

5 a nozzle to provide a concentrated flow of liquid gallium in a direction normal to a non-
6 bombarded surface of a low Z target material within the neutron source assembly; and

7 means for circulating said liquid gallium between said reservoir of liquid gallium, said
8 heat exchanger and the neutron source assembly to remove heat from a neutron generating low Z
9 target ~~low Z~~ material within the neutron source assembly.